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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,605	06/27/2003	Kong Weng Lee	70030259-1	2253

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EXAMINER

OWENS, DOUGLAS W

ART UNIT PAPER NUMBER

2811

DATE MAILED: 09/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/608,605

Applicant(s)

LEE ET AL.

Examiner

Douglas W. Owens

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 6/21/05.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 21, 2005 has been entered.

### ***Claim Objections***

2. Claims 1 – 10 are objected to because of the following informalities: in line 7 of claim 1, --of the substrate-- should be inserted after "surfaces", since a major surface of the die is also referenced in the claim. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 6, 7, 11, 12, 16 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 6,268,654 to Glenn et al.

Regarding claims 1 and 11, Glenn et al. teach a packaging device for a semiconductor die, (Fig. 5) comprising:

a substantially planar substrate (200) having opposed major surfaces;

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a conductive die mounting pad (222) dimensioned to accommodate the die (100), the pad being located on one of the major surfaces, and in contact with a major surface of the die;

a conductive connecting pad (221) located on the other of the major surfaces of the substrate; and

a conductive interconnecting element (220) extending through the substrate and electrically interconnecting the mounting pad and the connecting pad.

Regarding claims 2, 7, 12 and 18, Glenn et al. teach a device, in which the substrate comprises ceramic (Col. 5, lines 19 – 27).

Regarding claims 6 and 16, Glenn et al. teach a device, further comprising:

a bonding pad (204) smaller in area than the die mounting pad, the bonding pad located on the one of the major surfaces;

an additional conductive connecting pad (209) located on the other of the major surfaces; and

an additional conductive interconnecting element (203) extending through the substrate and electrically interconnecting the bonding pad and the additional connecting pad.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 4, 5, 9, 14, 15, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glenn et al.

Regarding claims 4, 9, 14 and 19, Glenn et al. teach a device, wherein the mounting pad comprises one of copper and gold (Col. 12, lines 40 – 44). Glenn et al. do not teach forming the connecting pad and the bonding pad to comprise copper, silver, gold, nickel or tungsten. Copper, silver, gold, nickel and tungsten are well known materials that are well suited for the intended use. It would have been obvious to one of ordinary skill in the art to use the cited materials, since it is desirable to use materials that are known and suited for the intended use. The selection of a known material based on its suitability for its intended use supported a *prima facie* obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Regarding claims 5, 10, 15 and 20, Glenn et al. do not teach that the conductive interconnecting element comprises tungsten. Tungsten is a known material that is well suited for use in an interconnecting element. It would have been obvious to one of ordinary skill in the art to use tungsten for the interconnect since it is a known material that is well suited for the intended use.

7. Claims 3, 8 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glenn et al. as applied to claims 1, 6 and 11 above, and further in view of US Patent No. 6,191,477 to Hashemi.

Glenn et al. do not teach a device, wherein the substrate is an epoxy laminate or silicon. Hashemi teaches a device, wherein the substrate is an epoxy laminate (Col. 3,

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lines 1 – 7). It would have been obvious to one of ordinary skill in the art at the time the invention was made, to incorporate the teaching of Hashemi into the device taught by Glenn et al., since it is desirable to use materials that known and well suited for the intended use.

8. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Glenn et al. as applied to claim 16 above, and further in view of US Patent No. 6,084,295 to Horiuchi et al.

Glenn et al. do not teach a device further comprising an encapsulant encapsulating the semiconductor die and at least a portion of the major surface of the substrate on which the mounting pad is located. Horiuchi et al. teach an encapsulant encapsulating the semiconductor die and at least a portion of the major surface of the substrate on which the mounting pad is located. It would have been obvious to one of ordinary skill in the art to incorporate the teaching of Horiuchi et al. into the device taught by Glenn et al. since it desirable to protect the device from the elements.

### ***Response to Arguments***

9. Applicant's arguments with respect to claims 1 – 20 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas W. Owens whose telephone number is 571-272-1662. The examiner can normally be reached on Monday-Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven H. Loke can be reached on 571-272-1657. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Douglas W Owens  
Examiner  
Art Unit 2811

DWO